

North American Drought Monitor – July 2005

Canada: The British Columbia interior generally received below normal rainfall during the month of July, with Kamloops recording less than 20% of normal for the month while northern interior areas received near normal amounts. Streamflow and groundwater conditions in the interior remained close to normal, with the exception of the Similkameen basin. The Similkameen and Tulameen river flows declined during July due to sparse precipitation during the second half of the month. The Nicola River was slightly below normal for July, while the Coldwater remains at a record low flow level. The southern interior received the least precipitation in the province and continues to be classified as abnormally dry (D0). Northern and coastal regions generally received near or above normal precipitation, with North Coast locations from Port Hardy to Prince Rupert receiving well above normal July rainfall. The lower Fraser valley and east Vancouver Island remain a concern for potentially significant low flow levels.

Across the Prairies, heavy June rainfall was followed by drier conditions in July. Much of northern Alberta received welcome rainfall during July, providing some relief to areas that were trending towards drought at the end of June. The northern Peace Region recorded below normal precipitation during June and is now classified as abnormally dry (D0). The Edmonton area continued to experience below normal precipitation during July and has been classified as abnormally dry (D0). Most of southern Alberta received below normal precipitation during the month. Since June rainfall was heaviest in the southwest and decreased towards the east, below normal July precipitation has caused the southeast portion of the province to be classified as abnormally dry (D0). Provincially, moisture stress has had little reported impact on crop development, with the exception of some parts of the Peace Region and more recently in the south. Agricultural areas in southwestern and northeastern Saskatchewan received below normal July rainfall and have been classified as abnormally dry (D0). Crops in these areas were reportedly impacted by heat and moisture stress. In the rest of Saskatchewan July precipitation was near or above average, more than 80 percent of the crops were in good or excellent condition, and crop yield estimates were generally near or above normal. The north Interlake and Northwest regions of Manitoba received below normal precipitation during July, with most precipitation caused by spotty thunderstorm activity. Central and southern areas generally received above normal precipitation, with thunderstorms creating localized areas of heavy precipitation. Some areas in western Manitoba and the northern Interlake region are in need of rain.

Southern Ontario was hot and dry during the month of July, with many stations reporting below 60% of normal precipitation and some below 40%. While significant rainfall late in the month was welcome, much of the region remained below 60% of normal for the three month period ending July 31. Several streamflow stations in Southern Ontario reported below 50% of average and three stations reported below 30% using the criteria defined by the Ontario Ministry of Natural Resources. The areas classified as being abnormally dry (D0) and experiencing moderate drought (D1) at the end of June have expanded. The area north and east of Prince Edward County was the driest in Ontario during July. Crop yields across much of southern Ontario were impacted by recent

moisture stress. Northeastern Ontario generally received below 60% of average July precipitation, resulting in the northward expansion of the areas classified as abnormally dry (D0) and experiencing moderate drought (D1). Several streamflow stations in Northeastern Ontario reported below 50% of average flow levels, with two below 30% using the criteria defined by the Ontario Ministry of Natural Resources. Northwestern Ontario generally received below 80% of normal precipitation; however, all streamflow stations in Northwestern Ontario reported above 100% of normal flow levels.

In Quebec, excessive July heat accelerated plant development, especially for potato plants. A number of areas received below normal precipitation during the month, particularly the region of Laurentides-Lanaudière. While drought stress was reported in a number of localized areas, fields are generally rated in good condition and impacts do not appear to be substantial. Variable yields are expected depending on local precipitation, especially in areas with sandy soil. The agricultural area northwest of Quebec City has received below normal precipitation for several months and is now classified as experiencing moderate drought (D1). The area surrounding Quebec City and extending south to the United States border received below normal precipitation during July and has been classified as abnormally dry (D0).

There are no reported drought concerns in Atlantic Canada. Although the western portion of Newfoundland continues to be classified as abnormally dry (D0), concern was alleviated by near or above normal July precipitation. Prince Edward Island received slightly below normal precipitation during July, and drought may become a concern if conditions remain dry. Moisture levels in Nova Scotia are near average levels. In New Brunswick, accumulated precipitation amounts for the past three months generally saw a decrease but are still near normal or above in most areas. Streamflows fluctuated throughout the month but the monthly runoff was not far from normal in most areas except for the Lepreau River, which was well above normal. Eastern areas were generally below normal while the southwest was above normal. Heavy thundershowers near the end of the month increased runoff in some southern areas to above normal. Observation wells in all areas were near normal or above at the first of the month.

United States: July was drier than normal across much of the West, especially the Pacific Northwest and Rocky Mountains, as well as parts of the Great Plains. Below normal precipitation was observed across parts of the Mississippi and Ohio River valleys, Great Lakes, and into the Northeast.

Dry weather has dominated much of the region from the southern Great Plains, across the Mississippi and Ohio River valleys, into the Great Lakes and Northeast since March. The drought conditions worsened across Illinois and Missouri where D3 was introduced this month. According to media reports, Illinois Governor Rod Blagojevich sent a request to the USDA on July 25th, requesting all 102 counties in Illinois receive federal disaster aid. More than 117,000 farmers statewide have reported crop production losses with 16 of those reporting a total loss. In Missouri, very little precipitation fell in the severe and extreme drought areas in the central and northeastern parts of the state during July.

Columbia, MO, had six consecutive days above 100°F in early July, and finished the month with 15.75mm (0.62 inch) of precipitation (16% of normal). Meanwhile, some areas of Missouri received moderate amounts of precipitation during July which allowed for some improvement in the D2 and D1 drought areas in the southeastern part of the state. Conditions also deteriorated in eastern Iowa. For the Quad Cities area of Iowa and Illinois, the January through July period ranked as the third driest since 1872 with 274.6mm (10.81 inches) leading to the expansion of abnormally and moderately dry areas and an introduction of D2 and D3. The normal precipitation total for this area during this time period is 577.6mm (22.74 inches).

In Wisconsin by the middle of the month, more than half (59%) of the state's pasture and range land was in poor to very poor condition leading to an expansion of abnormally dry and moderately dry conditions over the northwestern portion of the state. According to media reports, Wisconsin Governor Jim Doyle declared a statewide drought emergency on July 15th, to expedite irrigation relief for farmers. Elsewhere in the region, abnormal dryness developed across parts of northern Minnesota, and moderate drought expanded across northwest Wisconsin and the western Upper Peninsula of Michigan. Duluth, MN recorded only 20.83mm (0.82 inch) of precipitation for July (20% of normal). In northern Michigan, both Sault Ste. Marie and Traverse City experienced their seventh straight month with below-normal precipitation in July.

A late start to the monsoon season resulted in a dry July across parts of the Southwest. In Arizona, abnormally dry conditions were expanded to cover most of the western half of the state with the exception of the southwestern corner to account for fire activity reported by the National Interagency Fire Center (NIFC) and also based on 7- to 60-day percent of normal maps. The spotty, slow starting monsoon produced a few areas of above normal rainfall but the majority of the state remained dry. Also in Arizona, the D1 in the southeastern corner of the state was expanded eastward in New Mexico to include remaining areas of climate division 7 based on below normal rainfall and local reports of agricultural impacts and low streamflow. July was a very dry month across New Mexico as well, allowing moderate drought to develop across southwest New Mexico, and abnormal dryness D0 to spread across all of central and eastern regions of the state into western Texas, where abnormally dry conditions also developed during the month. Although July was generally a wet month for eastern Texas, extreme drought conditions remained in the northeastern corner of the state. In the southern portions of the state, improvements to all categories were made which were largely attributed to Hurricane Emily. Emily made landfall approximately 75 miles south of Brownsville, near Boca Madre, Mexico, on the 20th, depositing between 50.8-101.6mm (2-4 inches) of rainfall.

According to end-of-July USDA observations, more than 50 percent of the topsoil moisture was rated short to very short (dry to very dry) across the Pacific Northwest and Rocky Mountains. There were also USGS reports of low streamflow levels in these areas during July. In Colorado, D0 conditions were expanded to cover the majority of the state. In Denver, CO July was the second warmest and third driest July on record going back to 1872. Only 6.85mm (0.27 inch) of precipitation was recorded (13% of normal). Fort Collins, CO also had their second warmest July on record, along with their 8th driest,

totalling only 8.13mm of precipitation (0.32 inch) for the month. Elsewhere in the Rockies, Helena MT had its driest July on record with only 1.78mm (0.07 inch) of precipitation for the month. As a result of the warmth and dryness across Montana, an area of severe drought has developed along the Front Range, while D1 and D0 conditions expanded across northern Montana.

The July precipitation pattern at the primary stations in Alaska was mixed but generally drier than average in the west and wetter than average in the east. Across Hawaii, most of the stations were drier than average, especially in Kauai and the Big Island for July and the last 3 months. In Puerto Rico, the precipitation signal was mostly wetter than normal, based on National Weather Service radar estimates of precipitation and 4-week station reports. July streamflow averaged near normal for the Hawaiian Islands and wetter than normal for Puerto Rico.

Mexico: July was a wet month across sections of northeastern and southwestern Mexico. The National Meteorological Service (SMN) reported that the country received an average rainfall total of 172mm (6.77 inches) which is above the long term mean of 138.2mm (5.44 inches) (1941-2004). The rainfall distributions for July reflected the impact of Hurricane Emily and Tropical Storm Gert which entered the country from the east. Along the paths of these two storms, precipitation exceeded 150% to 200% of the average monthly rainfall in large sections of Tamaulipas, northern Veracruz, Nuevo León, Coahuila, northern San Luis Potosí and Durango. Emily did not strongly affect the monthly rainfall totals in Yucatan but the storm did help to break a period of dryness in the peninsula.

The summer rainy season was delayed through large sections of northwest Mexico with many stations reporting the third to the tenth latest start date on record (based on data from Sinaloa and Sonora, 1941-present). Beginning about July 15th, however, rainfall was well above normal in northern Mexico in part due to the affects of Emily and Gert. Consequently, monthly rainfall totals showed strong recuperation from the very dry start to the month. Cold SSTs surrounding Baja California appear to have suppressed the development of rainfall across the peninsula and consequently rainfall in this region was less than 50% of normal. It should be noted, however, that summer rainfall in Baja California does not ramp up until August and September.

In far southwest Mexico, rainfall totals were near normal with some dry pockets noted in Colima and interior sections of Michoacan in the lower Rio Balsas. Tropical Storms Dora and Eugene contributed rainfall to coastal sections of southwest Mexico as these systems tracked northwest in the eastern tropical Pacific. In Chiapas rainfall totals were normal to above normal with Pacific Coast stations receiving between 150% and 200% of their normal July precipitation.

The late start to the rainy season in northwest Mexico allowed a region of drought (D0 and D1) to expand along the border of Sonora and Chihuahua. Rainfall in late July was not sufficient enough to make up for the deficits observed early in the month. In sections of west-central Mexico (Zacatecas, Jalisco and Nayarit) the late start to the monsoon

resulted in subnormal rainfall totals and the development of minor drought conditions (D0 and D1). In Veracruz and Tabasco drought conditions showed some moderation (back to D0) as July rainfall was normal to above normal.